Space Weather Forecast

Issued on Sunday, 08 May 2022 at 13:21 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Minor geomagnetic storms on Day 3. Chance of radio blackouts.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Low over the past 24 hours with a few common-class X-ray flares observed by the GOES16 satellite. The largest of these flares came from a new sunspot near the southeastern horizon at 08/0353UTC, as well as a smaller common class event at 07/1507UTC. This group is yet to fully emerge and may have been responsible for a far-sided Coronal Mass Ejection (CME) shortly before its arrival on the Earth-facing side. Four other sunspot regions have shown little in the way of significant activity. A large number of 'filaments' (arcs of plasma) cover the Earth facing side of the sun at present. One 'filament lift-off' occurred in the northeastern part of the sun (around 06/1900UTC). This was seen in subsequent satellite imagery and has been analysed with a possible Earth-bound component, due late on 10 May or early on 11 May. No other CMEs were in evidence in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind followed a Low regime in the period. The number of particles comprising the wind and their magnetic field were both unremarkable, and resulting geomagnetic activity was quiet.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Activity starts the forecast period Low, with a daily Chance (40%) of a moderate-class flare and a Slight Chance (5%) of strong. This risk may lift if the emerging sunspot region on the southeastern limb develops further in coming days and may become the focus for the coming week.

Solar Wind / Geomagnetic Activity: No significant fast solar winds feature in this forecast Quiet geomagnetic activity is probable for most of the period. Later on day 3 (10 May) or early on day 4 (11 May) a CME may give a period of Active to minor geomagnetic storm intervals spawned by a disappearing filament on 06/1900UTC.

Energetic Particles / Solar Radiation: No solar radiation storms are expected, with a daily slight chance of S1 largely as a result of the largest sunspot's westward advance towards a better-connecting part of the sun (should any large X-ray flare and subsequent proton event be produced).

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	30	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	40	30	20	10
Very Active	R3 to R5 X	No	10	10	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	2	2	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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